0012

cc: Mary Ann

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
Governor
Kathleen Clarke
Executive Director
Lowell P. Braxton
Division Director

1594 West North Temple, Suite 1210
PO Box 145801
Salt Lake City, Utah 84114-5801
801-538-5340
801-359-3940 (Fax)
801-538-7223 (TDD)

June 18, 1999

TO: File

THRU: Daron Haddock, Permit Supervisor

FROM: Paul Baker, Reclamation Biologist

RE: Field Visit to Wildcat Loadout to Resolve Concerns of the Division of Wildlife Resources, Andalex Resources, Inc., Wildcat Loadout, ACT/007/033, Folder #2, Carbon County, Utah

SUMMARY:

On April 26, 1999, the Division received a letter from the Division of Wildlife Resources commenting about operations at the Wildcat Loadout. They expressed concern about collisions between coal trucks and wildlife and about the effects of coal fines on vegetation in adjacent areas. Because the road leading to the loadout is not permitted, the problem of collisions with wildlife is beyond the Division's jurisdiction. However, if operations at the loadout are adversely affecting vegetation and wildlife habitat in adjacent areas, this is within the Division's purview.

On May 6, 1999, Chris Colt of the Division of Wildlife Resources and I visited the site and took measurements of vegetation cover and shrub density and observed the depth and apparent severity of coal fines in six one square meter plots in areas east (affected) and three plots south (unaffected) of the loadout. Mike Glasson of Andalex was with us at the beginning of this visit and explained some of the history of the site, but he left before we actually started taking measurements.

HISTORY:

The mining and reclamation plan contains information about two wildlife habitat mitigation projects the operator has done in conjunction with the BLM. Based on information in the plan, it appears the operator interseeded about 56 acres, removed some pinyons and junipers, and installed a water catchment with a capacity of 2100 gallons. This work was apparently to mitigate for the disturbance of the loadout itself and not for adjacent affected areas.

In 1994, the Division wrote a violation based on off-site coal fines contaminating surface water. The operator was required to submit a plan to prevent the migration of coal fines outside the disturbed area and to clean up the fines already there. This plan apparently consisted of installing and maintaining straw bales in certain areas, and the disturbed area was expanded to include some area east of the loadout beyond the fence. Topsoil and vegetation have not been removed from this area even though it has been included in the disturbed area boundary.

OBSERVATIONS:

Vegetation cover measurements are summarized in Table 1.

Table 1

	Affected Area		Unaffected Area	
Species	% Cover	No. per m^2 (Woody only)	% Cover	No. per m^2 (Woody only)
Sagebrush	2.0	0.3	9.3	3.6
Winterfat	11.3	6.9	0.3	0.1
Snakeweed	0.3	0.2	3.3	6.8
Prickly Pear	1.2	0.1	0.0	0.0
Grasses	16.2	--	7.7	--
Total	31.0	7.5	20.7	10.5

We estimated the depth of coal fines at each sampling site and assigned a numerical rating for how severely it appeared each area was affected. The average depth in the affected area was 1.3 inches, and the average rating was 2.75 on a scale of 1 to 5 (1=no fines, 5=black). There were no coal fines in the unaffected area.

Not enough samples were taken that a statistical analysis could be done; however, the trends in the data are consistent with our general observations. The unaffected area clearly had more sagebrush than the affected area, but the affected area had many more winterfat plants. In addition, the unaffected area had many sagebrush seedlings where many of the sagebrush plants in the affected area were decadent.

The affected area had much more total cover, and the difference is primarily in the amount of cover from grasses. These grasses, however, were mostly blue grama and galleta

which provide less forage and cover for wildlife than shrubs or many cool season grasses.

POSSIBLE CAUSES:

1. Entirely natural. Since the affected areas have many decadent and dead sagebrush plants and few seedlings, and since the unaffected areas have many seedlings, it appears sagebrush was once able to reproduce in the affected area and grow to maturity. Therefore, an entirely natural cause does not seem likely.

2. Changes in soil chemistry caused by coal. This is possible since winterfat is more tolerant of higher salt concentrations than sagebrush. This could also affect the number of sagebrush and snakeweed seedlings that can become established. Based on coal sample results in the mining and reclamation plans for both the Crandall Canyon and Centennial Mines, it does not appear this is the reason; however, there are some samples with low pH values. It does not appear there are problems with boron or selenium.

3. Snow melts earlier in affected areas. Coal on the snow surface would increase absorption of energy from visible light and accelerate snow melt. Early snowmelt could result in two possible problems:

    a. As mentioned in the letter from Wildlife Resources, snow melting early allows the soil to dry more quickly. Sagebrush would come out of dormancy early and use available water, so less water would be in the soil later in the summer.

    b. If the snow melts, sagebrush would be exposed to more browsing. Browsing would stress the plants and increase mortality. Winterfat, being a lower-growing plant, is less likely to be browsed than sagebrush.

4. Grass cover in affected areas may be increased by the lack of competition from sagebrush. Studies have shown interspecific competition between sagebrush and grasses, but there is less competition from some of the chenopods. This probably does not increase the amount of forage available, however, especially during the winter, because the grasses and winterfat would not generally protrude above the snow.

5. Increased soil temperatures caused by the darkened soil. This is also mentioned in the letter from Wildlife Resources. This could affect the established sagebrush, but it is more likely it decreases the number of seedlings that can get established.

RECOMMENDATIONS:

Since one possible reason for the observed changes in vegetation composition is a change in soil chemistry, the operator should take soil samples from affected and unaffected areas and compare them. Parameters that should be measured are pH and electrical conductivity. These are relatively simple and inexpensive tests. In the affected area, five samples should be taken of both the coal on the surface and of soil under the coal. A few samples should also be taken of the soil in undisturbed areas, and Division personnel need to be present when the samples are taken.

The Division of Wildlife Resources suggested the operator interseed a few plots of about three acres each with a mixture of salt desert shrub species which are more temperature, drought, and salt tolerant but would still provide quality browse for wintering big game. It is expected fourwing saltbush would be well adapted to a site like this. If the interseeding is successful, the rest of the affected area should eventually be interseeded to increase the number of shrubs available to big game during the winter. At some time, possibly at reclamation or before if the fines become too deep, the operator would probably need to vacuum or scrape coal fines from the area.

H:\PERMIT\OTHER\WDDWRMEM.PBB